RECENT TRENDS IN THE HUMAN RESOURCE MANAGEMENT FUNCTION AND THE USE OF ARTIFICIAL INTELLIGENCE: A BIBLIOMETRIC ANALYSIS

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This paper examines contemporary trends in human resource practices in light of rapid technological developments, with a focus on the growing integration of artificial intelligence (AI) into organisations undergoing digital transformation. Through a bibliometric analysis of 715 Scopus-indexed publications on AI in HRM from 2010 to 2024, the study reveals a significant increase in scholarly output since 2018. This reflects the transformative role of AI in reshaping HR functions. The findings identify India, China and the United States as major contributors to this field of research, while also highlighting the underrepresentation of Arab regions. Prominent research topics include AI-based decision-making, machine learning applications, and ethical considerations. The analysis also emphasises extensive international collaboration, particularly with the United States acting as a central node in global research networks. The findings emphasise the potential of AI to enhance recruitment, performance management and operational efficiency in HR. However, challenges such as implementation costs, ethical dilemmas and the need to upskill the workforce remain critical barriers. The study recommends strengthening digital skills, promoting rigorous research, and developing inclusive policies to enable ethical and successful AI integration in HR functions across economic organisations.

Keywords: Human resource management; Artificial intelligence; Bibliometric analysis.

INTRODUCTION

The Human Resources (HR) function plays a pivotal role in enhancing organisational efficiency and employee capabilities amid rapid technological advances and global market complexity. The integration of artificial intelligence (AI) and digital tools has redefined HR practices, improving decision-making, operational resilience, and cost efficiency. Empirical studies reveal that AI-driven analytics enhance decision-making efficiency by 40–50% and reduce strategic planning cycles from weeks to hours, resulting in up to a 25% market share increase (Chui, et al., 2023). Moreover, 64% of business leaders credit their operational resilience to advanced digital infrastructure (World Economic Forum, 2024). On the other hand, digitally immature organisations suffer a 23% decline in revenue growth compared to digital competitors, primarily in unstable business environments (Singla et al., 2024). Manual and tedious HR practices undermine competitiveness; however, generative AI accelerates recruitment, training, and task execution while enhancing candidate matching and engagement (Khan et al., 2024). The AI-powered automation of payroll, scheduling, and data management enables HR professionals to shift focus to strategic development. This shift increases operational efficiency by 30% and supports personalised employee feedback (Sundari et al., 2024). On the downside, AI integration exacerbates issues such as algorithmic bias, data privacy, and governance (Kaur, 2024). There are also challenges related to the development

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of new competencies and continuous learning in the evolving digital environment.

Motivated by AI as an interesting but yet unexplored research stream in the HRM context, this study forecasts future research trends by formulating the following hypothesis: the AI adoption is on the rise because its practical efficiency in HR optimisation has already been empirically demonstrated. The study therefore identifies how AI's potential can be fully harnessed by organisations with consideration of ethical and skill-related challenges encountered in the process of mutual adaptation of AI technologies and the HRM field. The result is a theoretical nexus of solutions for contemporary HRM in the era of AI to practice. The study proposes three major themes: AI optimisation of HR, ethical governance of AI use, and digital skills equity in ethical technology integration as a response to the research gap. These themes can be used for the elaboration of specific training policies for decision-makers, while the framework of implementation benchmarking with practical measures can be used by organisations for an actual improvement in their personnel's workforce competencies and digital leadership in the innovation economy.

THEORETICAL BACKGROUND

Literature Review

The contemporary literature demonstrates a profound transformation in Human Resource Management (HRM) practices through the integration of Artificial Intelligence (AI). Modern organisations increasingly rely on AI-driven systems to enhance efficiency, transparency, and strategic alignment in managing their workforce. Kaushal et al. (2023) developed an AI-driven HRM framework that synthesises key contributions and emerging areas of research, offering organisations a structured model for expanding AI implementation across HR functions. This framework assists companies in optimising recruitment, training, and performance management through technology-enabled processes that improve accuracy, responsiveness, and innovation.

Artificial intelligence has shifted the focus of HR professionals from administrative to strategic roles. According to Tewari and Pant (2020), the incorporation of AI technologies enables data-driven decision-making, automates repetitive processes, and minimises bias, thereby improving

both operational and strategic outcomes. Similarly, Kaur (2024), Benabou et al. (2024), and Bharadwaj (2024) highlight that AI-driven analytics enhance recruitment precision, personalise employee training, and facilitate proactive performance management. However, this transformation is not without challenges. Shouran et al. (2024) and Chowdhury et al. (2024) emphasise that organisations must address ethical issues, data privacy concerns, and accountability gaps to ensure sustainable implementation.

The growing body of research underlines AI's dual potential and risk in reshaping HR practices. Murgai (2018), Nishar (2022) and Votto et al. (2021) note that while AI improves decision-making and streamlines Human Resource Informational System (HRIS), adoption barriers persist, including limited data access, employee resistance, and the absence of ethical oversight. Tambe, Cappelli, and Yakubovich (2019) highlight the importance of organisational readiness and leadership commitment to overcome these challenges, whereas Tiwari (2020) and Budhwar et al. (2022) identify HR professionals' adaptability as the decisive factor in achieving balanced AI integration. Ossiannilsson et al. (2024) add that AI proved particularly valuable during the COVID-19 pandemic, enabling remote work coordination and performance tracking—an advantage that remains relevant in post-pandemic HR operations.

In a comprehensive ten-year review of IT-based HR solutions, Berhil et al. (2020) identify the Decision Tree, Support Vector Machine, and Random Forest algorithms as the most widely used AI techniques, particularly in recruitment and talent analytics. Vrontis et al. (2021) emphasise the disruptive potential of intelligent automation in workforce management, including human–robot collaboration, decision-making, and learning systems. Achchab et al. (2021) similarly find that AI can effectively address HR challenges related to recruitment, compliance, and onboarding. Research by Verma et al. (2019) and Venugopal et al. (2024) confirms AI's role in improving candidate selection and training but warns of algorithmic bias and ethical dilemmas, advocating the establishment of responsible governance frameworks.

Recent contributions deepen the theoretical understanding of AI-HRM relationships. Gong et al. (2024) propose four future research pathways—AI-enhanced collaboration, AI-driven workplaces, AI-enabled business models, and AI-powered

innovation—calling for cross-disciplinary research to bridge technology and human management. Pan et al. (2021) apply the Technology–Organisation–Environment (TOE) model to analyse AI adoption in recruitment, finding that technological readiness, regulatory support, and organisational competence facilitate adoption, whereas perceived complexity limits it. Palos-Sánchez et al. (2022) demonstrate through bibliometric analysis that AI-HRM research remains largely recruitment-centric, underscoring the need to explore other HR domains. Similarly, Wang (2025) highlights the impact of deep learning on HR efficiency while identifying critical challenges such as data security, bias, and the necessity for reskilling programmes. Suseno et al. (2021) provide behavioural evidence that positive managerial attitudes encourage AI adoption, while anxiety related to automation may hinder it; high-performance work systems mitigate this effect.

Collectively, the literature indicates that AI is driving HRM towards a data-centric, proactive discipline while exposing ethical, operational, and human challenges that must be addressed through robust frameworks and targeted training. Successful AI integration depends on balancing technological innovation with transparency, accountability, and workforce adaptability.

Human Resource Management

Human Resource Management (HRM) has undergone a fundamental transformation from a support function to a strategic pillar of organisational competitiveness. Early conceptions, such as Bakke's (1961) and Harel et al.'s (1999), viewed HRM as the systematic utilisation of human resources to achieve corporate objectives. Contemporary perspectives (Arokiasamy et al., 2023; Ishimwe et al., 2024) extend this to include human potential as a strategic asset within technologically enhanced management systems. Modern HRM emphasises employee empowerment, participatory decision-making, and continuous learning through technology-enabled tools. It positions employees not merely as resources but as active contributors to innovation and value creation. This paradigm shift reflects the integration of digital transformation with human capital development—an essential combination for sustainable competitiveness in the digital age.

Artificial Intelligence

Artificial Intelligence (AI) has evolved from John McCarthy's foundational 1955 definition, as the science of creating intelligent machines (McCarthy et al., 2006) into a complex, interdisciplinary domain encompassing machine learning, neural networks, and contextual reasoning (All Noman et al., 2022). Modern AI systems simulate cognitive processes such as perception, learning, and adaptation, extending their applications across healthcare, finance, and management. Their incorporation into HRM represents a new stage of socio-technological development where humans and machines collaborate in decision-making. As AI progresses beyond preprogrammed limits, it introduces new efficiencies and ethical questions about responsibility, autonomy, and human–machine interaction.

The Benefits of Using Artificial Intelligence in Human Resource Management

The integration of artificial intelligence into HRM brings measurable improvements in efficiency, decision accuracy, and workforce engagement (Madanchian et al., 2024). To explain successful adoption, three theoretical frameworks are particularly relevant.

The Technology Acceptance Model (TAM) (Davis, 1989) highlights the significance of perceived usefulness and ease of use as predictors of employee acceptance of AI systems such as automated recruitment platforms or digital performance dashboards.

The Technology–Organisation–Environment (TOE) framework stresses contextual factors, including technological readiness, organisational culture, and external pressures such as regulatory standards and market competition. Even the most advanced AI solution will fail if data governance or leadership support is lacking.

Finally, the Ability–Motivation–Opportunity (AMO) theory (Appelbaum et al., 2001) connects AI adoption to enhanced employee capability, motivation, and opportunity for development. AI supports skill-building through adaptive learning systems, strengthens motivation through real-time feedback, and creates opportunities by automating repetitive work.

However, these benefits are counterbalanced by ethical challenges, such as algorithmic bias, data privacy, and employee resistance (Honnamane & Girish, 2024; Kessavane, 2025; Pandit, 2025). Addressing these issues requires transparent governance, accountability mechanisms, and continuous professional training (Dubey, 2023; Zielińska, 2025). Empirical findings demonstrate AI's potential to enhance talent retention (Paigude et al., 2023) and improve the employee experience (Okatta et al., 2024) when guided by ethical governance and lifelong learning initiatives (Tambe et al., 2019).

Integrating these theoretical perspectives—TAM, TOE, and AMO—offers a comprehensive roadmap for managing AI complexity in HRM. Together, they ensure that technological advancement aligns with human and strategic needs, promoting both innovation and social responsibility in the digital workplace.

RESEARCH METHODOLOGY

Research Design

This research employs a bibliometric approach to examine the scientific landscape on the application of Artificial Intelligence (AI) in Human Resource Management (HRM). A total of 750 english-language research papers were retrieved from the Scopus database using relevant keywords related to AI and HRM. All identified articles were downloaded and imported into R software for bibliometric analysis, enabling the extraction of statistical indicators on publication trends, influential authors, and emerging research themes.

Bibliometric Analysis: Definition, Process, and Steps

Bibliometric analysis is a quantitative method used to assess research trends and intellectual structures within a discipline. Pritchard (1969) defined bibliometrics as the use of mathematical and statistical techniques to analyse books and other communication media, while Potter (1981) described it as the study and measurement of

publication patterns across all written communication (Broadus, 1987).

Following Passas (2024), the procedure in this study comprises seven main stages:
- **Introduction and Research Design** – defining the research problem, objectives, and scope.
- **Data Collection** – retrieving scientific literature from Scopus and other databases (e.g., Web of Science, Science Direct) and exporting metadata in compatible formats (RIS, BibTeX, Plain Text) through reference managers such as EndNote, Mendeley, and Zotero.
- **Data Cleaning and Preprocessing** – removing duplicates, correcting inconsistencies, and standardising entries.
- **Bibliometric Analysis Setup** – processing data using techniques such as bibliographic coupling, co-word analysis, and co-citation analysis to identify relationships and conceptual clusters.
- **Data Processing and Software Application** – applying analytical tools (R, Python, VOSviewer, CiteSpace) to determine influential authors, key publications, and thematic trends.
- **Visualisation of Results** – creating graphical representations such as network maps, co-citation diagrams, and trend charts to illustrate findings.
- **Interpretation and Conclusions** – evaluating citation counts, keyword evolution, and collaboration networks to draw insights and propose future research directions.

Data Cleaning and PRISMA Framework

To ensure methodological rigour, data cleaning followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework, encompassing four sequential phases: identification, screening, eligibility assessment, and inclusion and synthesis. This structure enhances the transparency, replicability, and validity of the bibliometric process, aligning with internationally recognised standards for systematic research. The process is summarised in Figure 1, which presents the PRISMA flow of study selection and data refinement.
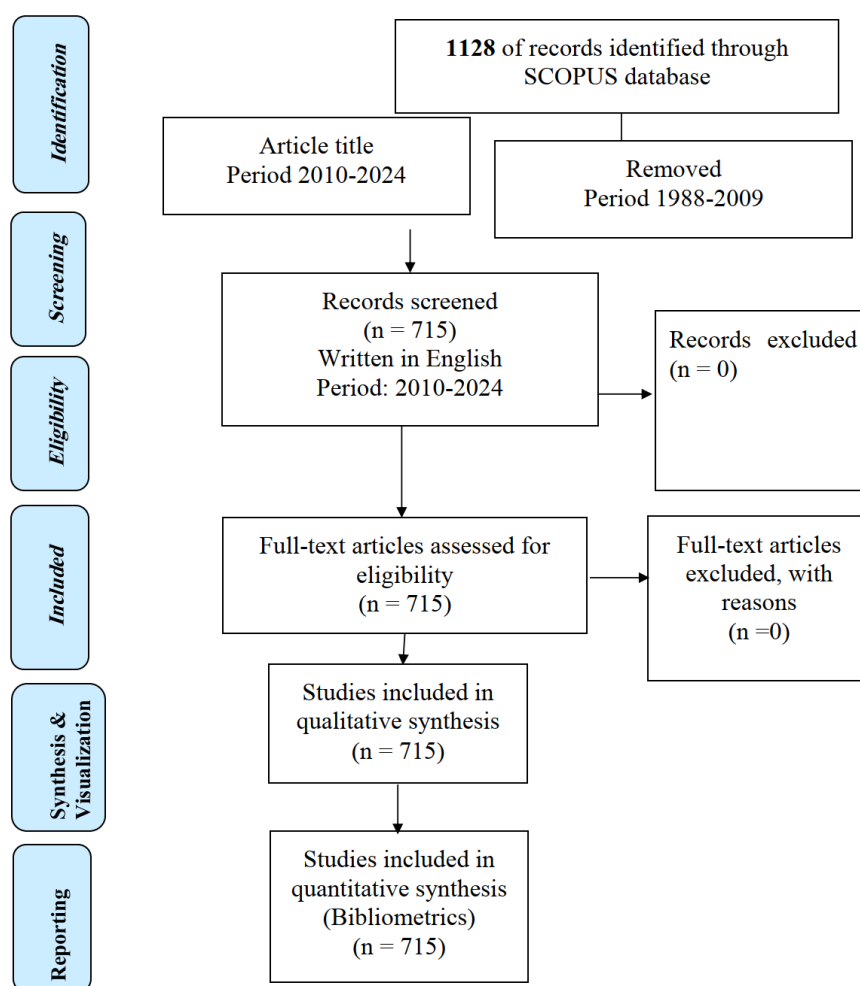
Figure 1: PRISMA steps for cleaning and screening bibliometric data.

Data Overview and Analysis

The bibliometric analysis began with 1,128 records identified in Scopus. After excluding 413 studies published before 2010, the final dataset comprised 715 English-language publications covering the period 2010–2024. No further exclusions were made during title/abstract screening or full-text review, reflecting intentionally broad inclusion criteria to capture the field's interdisciplinary scope. All 715 studies underwent dual analysis:

− **Quantitative bibliometric examination** in *R software* to identify publication frequency, authorship networks, and citation structures; and

− **Qualitative thematic synthesis** to trace the evolution of research topics and geographic distribution of contributions.

This integrated approach revealed distinct trends in publication chronology, research collaboration, and thematic focus, providing a comprehensive overview of how AI applications have developed within HRM scholarship. Future research could further enhance methodological transparency by explicitly incorporating quality-assessment parameters and impact normalisation techniques.

RESULTS

Overview of the Dataset

The results of the bibliometric analysis provide a clear and structured insight into the scientific landscape at the intersection of Artificial Intelligence (AI) and Human Resource Management (HRM). The study applied a rigorous selection process to ensure precision and reliability, while maintaining broad inclusion criteria suitable for an emerging, rapidly evolving research area. The findings delineate the current academic discourse and establish a foundation for subsequent investigations.

Interpretation of Descriptive Results

As presented in Table 1, the dataset spans the period 2010–2024, comprising 715 publications drawn from 381 sources, including journals, books, and conference proceedings. The annual growth rate of 2.51% and the average document age of 3.15 years confirm that this is a young yet rapidly expanding research field. Each paper receives on average 19.73 citations, while nearly 35,000 total references point to the field's scholarly maturity and interconnectedness.

Table 1: Descriptive data of the studied sample

Description	Results
MAIN INFORMATION ABOUT DATA	
Timespan	2010:2024
Sources (Journals, Books, etc)	381
Documents	715
Annual Growth Rate %	2.51
Document Average Age	3.15
Average citations per doc	19.73
References	34898
DOCUMENT CONTENTS	
Keywords Plus (ID)	2473
Author's Keywords (DE)	1852
AUTHORS	
Authors	2010
Authors of single-authored docs	122
AUTHORS COLLABORATION	
Single-authored docs	125
Co-Authors per Doc	3.13
International co-authorships %	28.39
DOCUMENT TYPES	
article	312
book	43
book chapter	148
conference paper	141
conference review	10
editorial	2
erratum	1
note	2
retracted	18
review	38

Keyword diversity (2,473 Keywords Plus and 1,852 author keywords) reveals broad thematic coverage, while authorship data indicate strong collaboration: over 2,000 authors contributed, averaging 3.13 co-authors per document, and nearly one-third of all works involve international teams. The distribution of document types underscores both academic productivity (312 journal articles) and interdisciplinary outreach, as seen in numerous book chapters (148) and conference contributions (141). The small number of errata and retractions, though minor, illustrates a healthy process of academic self-correction — typical of fast-developing fields driven by technological innovation.

Publication and Citation Dynamics

The longitudinal analysis indicates modest publication activity until 2012, followed by steady acceleration and a marked surge from 2018 onward. By 2024, annual output surpassed 200 papers, reflecting heightened global attention to AI-driven HR solutions. This shift aligns with the wider digital transformation of organisations and the rising importance of workforce analytics and intelligent automation.

Figure 2 presents the most relevant sources contributing to this literature. The AIMSEC 2011 Conference Proceedings stand out as an early milestone with 51 papers, establishing a foundation for subsequent work. Other prominent venues include Lecture Notes in Business Information Processing (18), Human Resource Management Review (14), and more recent outlets such as ICETSIS 2024 (10 papers), which emphasise sustainable and intelligent HR systems. These sources signal the field's transition from exploratory concepts towards mature, implementation-oriented research.

Figure 3 (Sources' Production Over Time) further illustrates this evolution. The trend line begins with early technical investigations (2011–2013), expands into business and organisational contexts (2015–2019), and culminates in 2024 with integrative perspectives linking AI ethics, sustainability, and HR governance. This chronological expansion confirms the maturation of AI-HRM research: what began as isolated pilot studies has developed into a stable academic domain with shared methodological and theoretical frameworks.
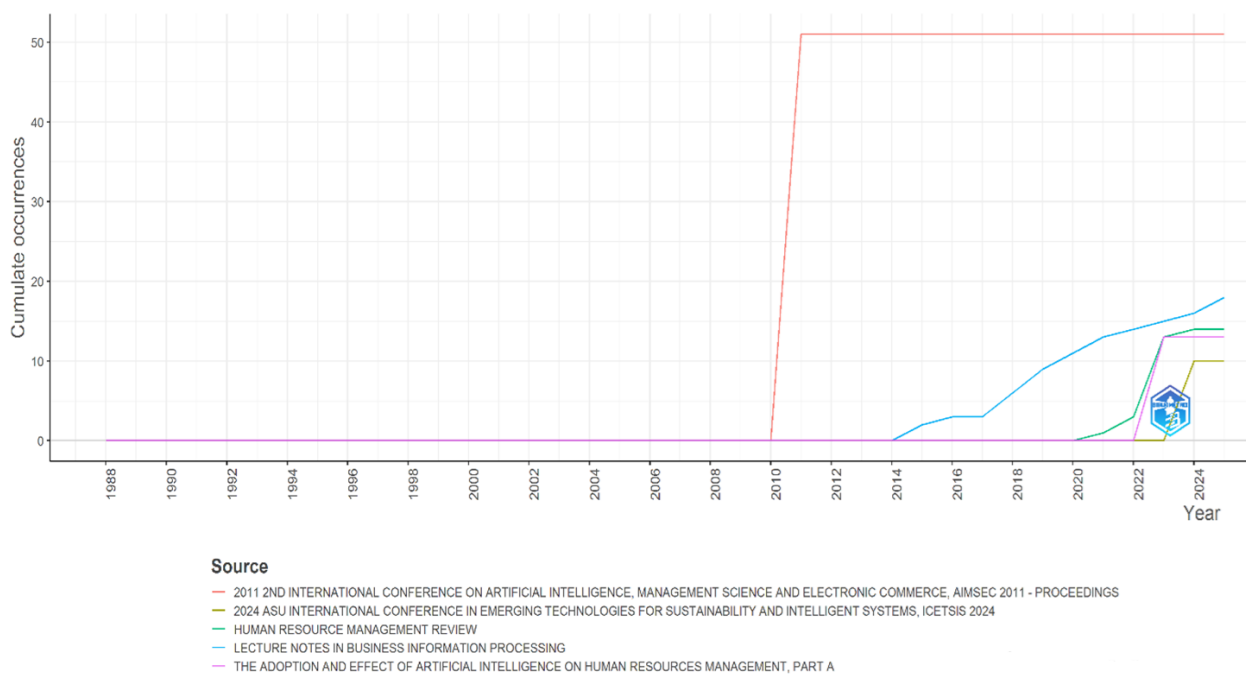
Figure 2: Most Relevant Sources

Figure 3: Sources' Production Over Time

Geographic and Institutional Landscape

Figure 4 (Country Production Over Time) illustrates the geographic spread of scholarly attention between 2010 and 2024. Initially, global output was modest, with fewer than 25 publications per year in most countries. However, after 2010, the trends diverge sharply:

– China shows the steepest rise, reaching over 400 publications by 2023;
– The USA follows with approximately 250, showing an equally steep post-2018 curve;
– Germany and the United Kingdom maintain moderate but consistent growth;
– India experiences a slower yet steady increase, marking its emergence as a regional hub.

Together, these trajectories demonstrate a clear shift of research activity towards Asia and North America, with Europe maintaining a strong supporting role.

Institutional productivity, shown in Figure 5, complements these patterns. Aston University (UK) and Henan Polytechnic University (China) lead

with 18 papers each, followed by University of Salerno (Italy) with 9, and Beijing and Curtin Universities with 8 each. Other contributors — Hohai University, Sapienza Università di Roma, Shandong University, Symbiosis International (India), and TBS Business School (France) – underscore the field's global dispersion.
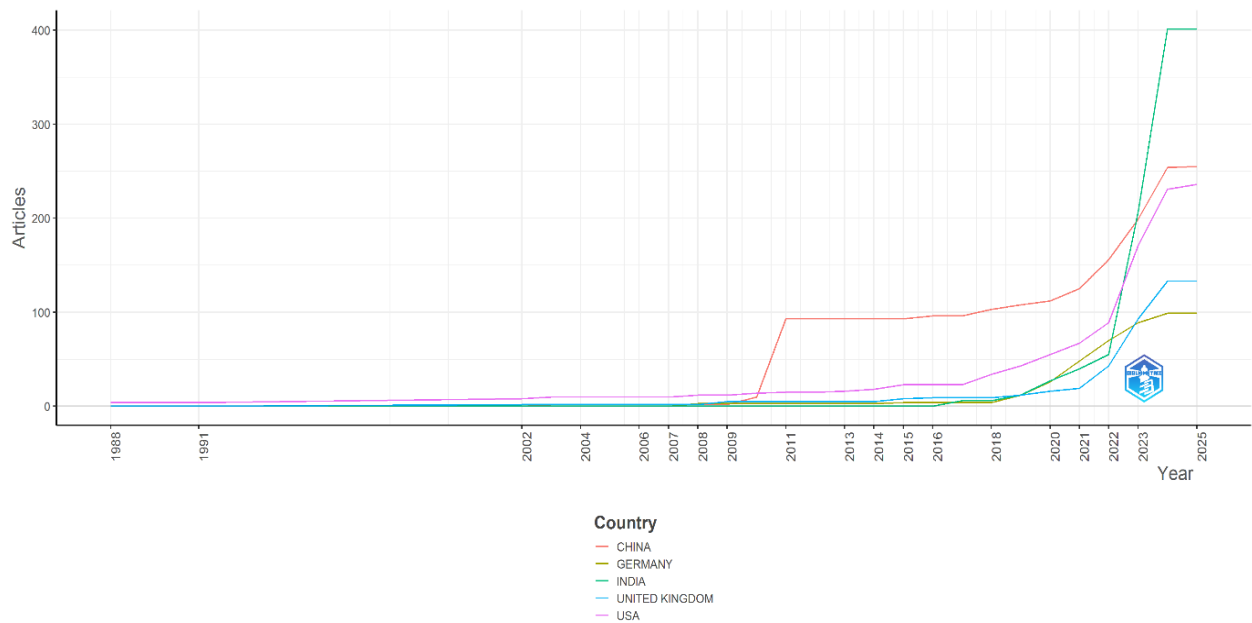

Figure 4: Country Production Over Time 2010-2024
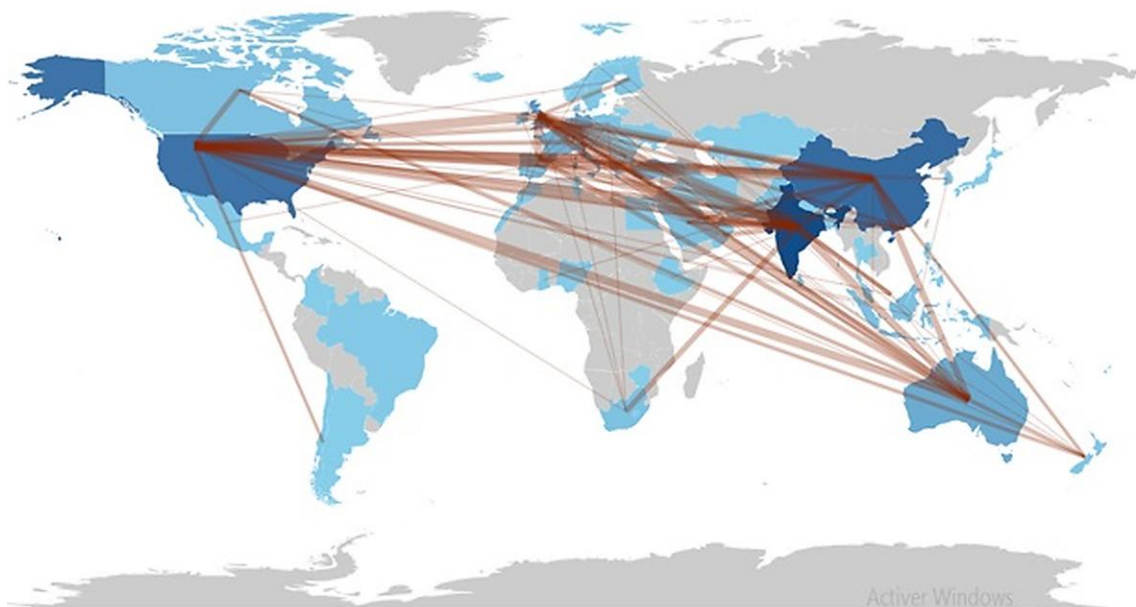

Figure 5: Cooperation between countries

The Countries' Collaboration Map in the same figure depicts dense interconnections among the USA, UK, China, Germany, India, and Australia, forming a core international collaboration network.

The thickness of links on the map visually conveys the strength of partnerships and highlights a growing multi-hub model of global research cooperation.

Citation Performance and Research Impact

Citation analysis offers a complementary perspective on influence and recognition. Figure 6 (Most Cited Papers) lists the top ten globally cited works in AI-HRM research. The most cited article, Dwivedi (2023), leads with 1,515 citations, far ahead of Tambe (2019) and Vrontis (2022), which have between 400 and 500 citations each. This sharp contrast exemplifies a "power-law" citation pattern, in which a few seminal works shape theoretical discourse while numerous others provide incremental contributions.

Figure 7 (Most Cited Countries) highlights the United Kingdom as the leading research hub with 2,197 citations, followed by France (~900) and the United States (~800). China, Italy, and Germany also appear as high-impact nations, each exceeding 600 citations. The pattern demonstrates not only differences in output but also disparities in global visibility, with Anglo-European research achieving the strongest academic resonance, while Asian contributions dominate in volume and growth rate.
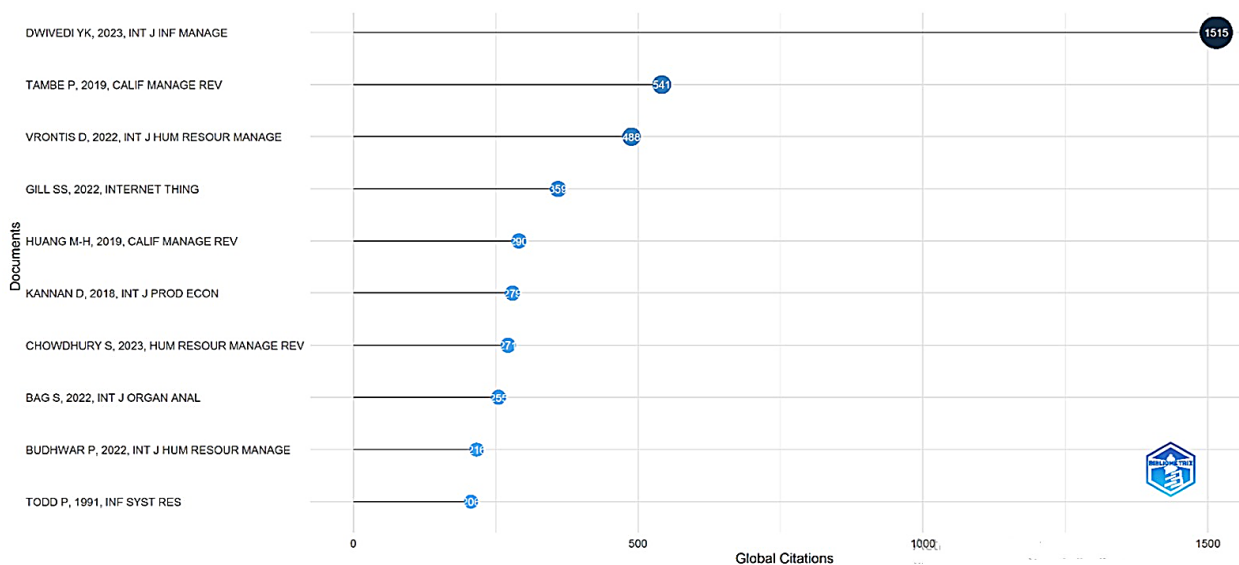

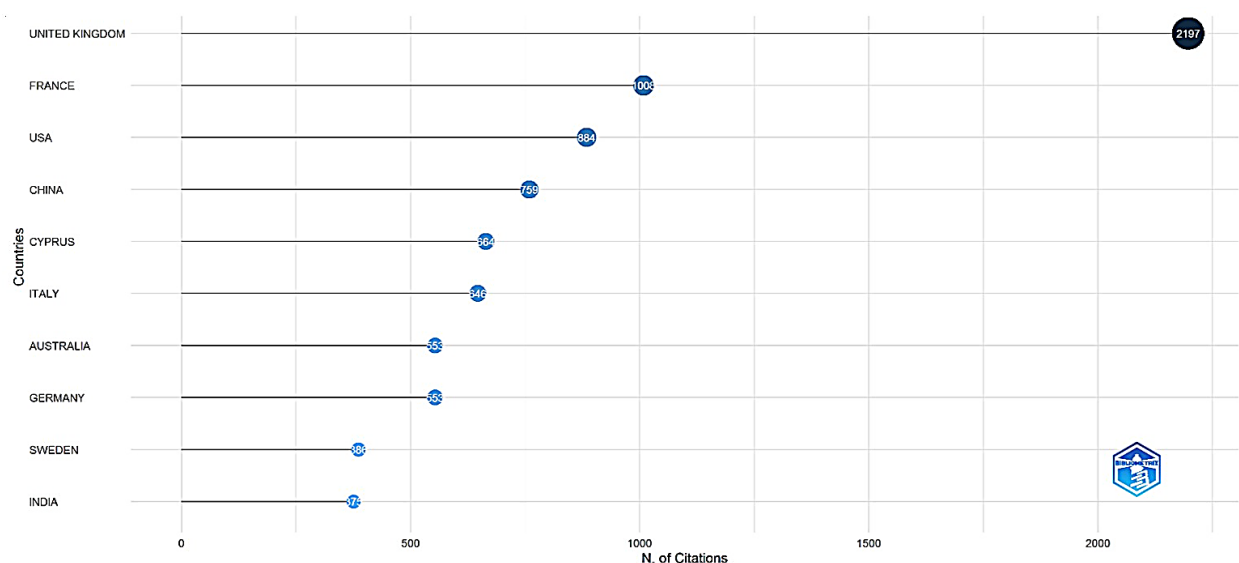*Figure 6: Most HighlyCited Papers Of Reviewed Publication*

Figure 7: Ranking of countries by most cited in the reviewed sample

Overall, these findings confirm that citation leadership and publication intensity do not always coincide: European institutions hold influence, whereas Asian universities drive expansion. The combination sustains the field's international vitality.

Research Developments and Thematic Trends

The thematic evolution of AI–HRM research, as presented in Figures 8 and 9, illustrates how artificial intelligence has gradually become embedded within human resource management. Together, the keyword co-occurrence map and the thematic clustering diagram provide a cohesive picture of how the field has matured conceptually and diversified methodologically.

Keyword Landscape and Conceptual Core

The treemap in Figure 8 highlights *Artificial Intelligence (18%)* and *Human Resource Management (14%)* as the two dominant pillars around which all other concepts are structured. Supporting clusters, such as *decision-making (5%)*, *information management (4%)*, *decision-support systems (4%)*, and *resource allocation (3%)* emphasise the increasing integration of algorithmic logic into HR decision-making. Secondary categories — *machine learning, personnel training, knowledge management, big data,* and *automation* (each 1–2%) — reflect the field's operational dimension, where technological tools are applied to everyday HR functions like recruitment, evaluation, and learning management.
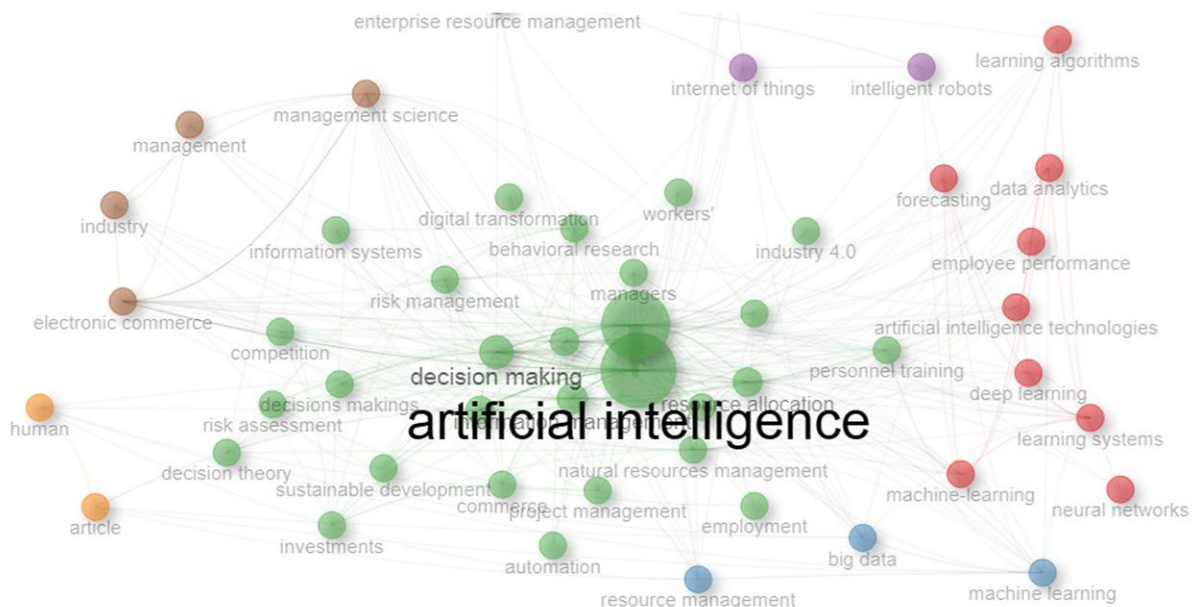

Figure 8: Trend Topics

The co-occurrence network reveals three main clusters: a technological cluster (machine learning, deep learning, neural networks), a strategic cluster (digital transformation, decision-making, risk management), and a human-centred cluster (ethics, behaviour, and employee engagement). Their interaction marks a key shift from technology-centred experimentation towards strategic, human-aware implementation. The balance among these clusters confirms that AI in HRM is no longer perceived merely as automation, but as a transformative framework combining efficiency, insight, and ethical responsibility.

Topic Maturity and Emerging Frontiers

The thematic map in Figure 9 organises the literature into three developmental zones:
- **Motor Themes**, representing mature and central topics such as *AI-based decision support, workforce planning,* and *risk management*, where AI has become a stable component of HR strategy.
- **Niche Themes**, including *generative AI* and *neural network optimisation*, which remain highly technical and specialised but may expand into broader applications.
- **Emerging or Declining Themes**, such as *explainable AI (XAI)*, *ethics in HR analytics,* and

sustainable HR governance, which signal the field's growing concern for transparency, interpretability, and long-term societal impact.

This structure reflects the discipline's transition from early experimentation to a phase of strategic and ethical consolidation. Within this framework, *machine learning* operates as a bridge between computational innovation and managerial transformation — the mechanism through which data-driven insights become actionable HR strategies.
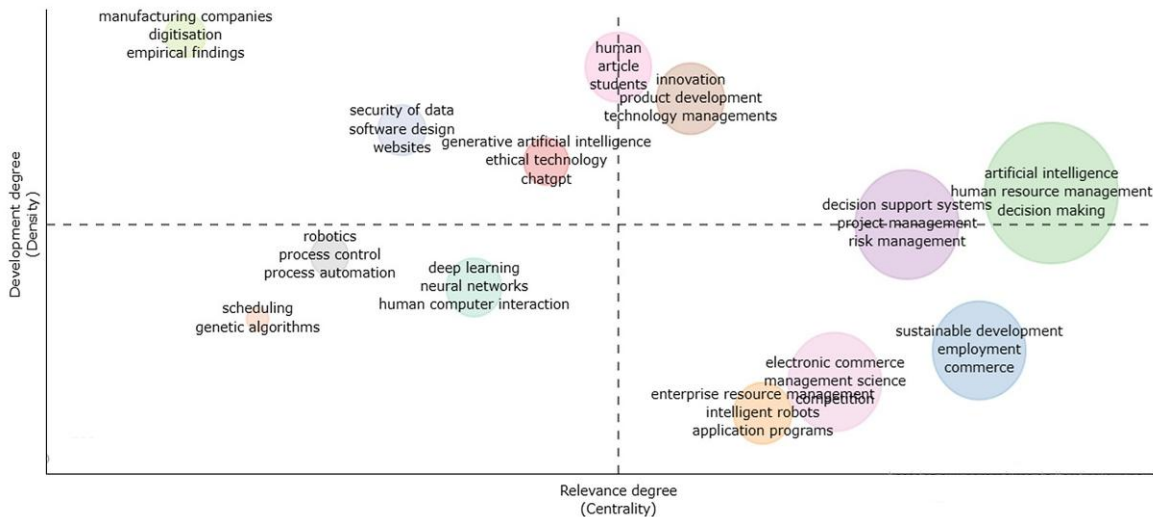

Figure 9: Keyword-related topic map

Synthesis

Overall, the findings portray a dynamic and globally distributed research domain that has evolved from exploratory beginnings into a coherent, application-oriented field.

- **Quantitatively**, publication growth and international collaboration demonstrate its expansion and visibility.
- **Qualitatively**, theoretical convergence and ethical reflection indicate a mature research identity.
- **Thematically**, AI and HRM are converging into a unified framework that balances technological precision with human values.

Through this trajectory, AI–HRM emerges as a strategic subfield of management and organisational sciences – linking data analytics, behavioural insight, and responsible leadership to create sustainable and human-centred digital transformation.

DISCUSSION

The comprehensive bibliometric analysis provides a multidimensional insight into the evolution of human resource management under the influence of artificial intelligence, capturing its transformation from technical experimentation to a strategic component of organisational development. Over the past fifteen years, research output has expanded dramatically, evolving from a narrow focus on feasibility studies to a diversified and mature body of work that positions AI as an essential driver of competitiveness and adaptability. The results indicate that the period between 2010 and 2012 marked the exploratory phase of AI-HRM, while the years following 2018 established a new paradigm of strategic implementation, with publication volumes now exceeding two hundred papers annually. This quantitative growth mirrors a qualitative shift in the discipline itself, where AI is no longer viewed as a complementary technology but as a structural element reshaping how organisations acquire, develop, and retain talent.

The strongest transformation is visible in three interrelated domains of HR practice. In talent acquisition, predictive analytics and algorithmic matching enable more objective and efficient hiring, reducing biases and improving job–person fit. In performance management, neural networks enhance fairness and precision in employee evaluation, while adaptive learning systems apply AI to individualise training pathways and promote lifelong learning. Together, these developments mark a profound redefinition of HR's role—from

administrative support to strategic leadership in organisational design. At the same time, however, the analysis reveals structural asymmetries in global research output. China and the United States dominate in volume, collectively accounting for the majority of publications after 2018, reflecting both their economic capacity and sustained state investment in AI ecosystems. The United Kingdom, although less prolific, emerges as a qualitative leader, producing the most cited works in the field and setting intellectual standards in ethics and responsible AI governance. Such geographic concentration has enabled technical progress but also deepened disparities, leaving developing economies positioned mainly as collaborative contributors rather than primary innovators. This imbalance underscores the need for more inclusive research networks capable of integrating diverse cultural, economic, and technological contexts into the AI-HRM discourse.

Institutional specialisation amplifies this pattern of asymmetry. Technical universities focus on algorithmic innovation, business schools on managerial frameworks, and hybrid institutions on cross-domain integration. While such division of labour fosters expertise, it also risks the formation of disciplinary silos that fragment knowledge and limit systemic solutions. As a result, many organisations—especially those in developing regions—possess the technical tools but lack the organisational and cultural readiness to employ them effectively. The research, therefore, exposes not only the progress achieved but also the persistent gaps between technological potential and implementation capability. These gaps translate into concrete operational challenges: insufficient digital skills among HR professionals, limited understanding of data ethics, and a lack of frameworks to guide adaptation across industries with varying degrees of digital maturity.

Within this complex landscape, three strategic imperatives for organisational practice become evident. First, the emergence of so-called translational experts—professionals able to bridge technical AI knowledge with HR decision-making—becomes a precondition for meaningful adoption. Second, organisations must develop implementation roadmaps that reflect their digital maturity, balancing ambition with capability. Third, the establishment of robust ethical governance structures is essential to ensure that AI applications in HR serve not only efficiency but also fairness, accountability, and employee trust. These

imperatives mark a transition from the technological enthusiasm of early research to a more responsible and sustainable approach that treats AI as an enabler of human potential rather than a replacement for it.

The theoretical foundations of these transformations can be explained through three complementary frameworks: the Technology–Organisation–Environment (TOE) model, the Technology Acceptance Model (TAM), and the Ability–Motivation–Opportunity (AMO) framework. The TOE model emphasises that effective AI-HRM integration requires alignment among technological infrastructure, organisational readiness, and environmental context. Organisations capable of combining advanced analytics and cloud computing with leadership commitment and stable regulatory environments are most likely to achieve sustainable transformation. By contrast, theTAM modeladdresses the human side of technological adoption, showing that perceived usefulness and ease of use remain critical determinants of acceptance (Davis, 1989). This is particularly relevant for AI-based recruitment and performance tools, where intuitive interfaces and demonstrable value significantly enhance trust and user engagement. The AMO framework (Appelbaum et al., 2001) extends this logic by showing that successful adoption depends on human capability and motivation, not merely on technological availability. Employees must be equipped with digital skills (ability), motivated through aligned incentives and recognition (motivation), and given opportunities to integrate AI tools into daily workflows (opportunity). The intersection of these three models provides a practical roadmap: TOE secures the structural base, TAM facilitates user acceptance, and AMO sustains long-term performance. Organisations that successfully combine these perspectives—often through cross-functional teams joining HR experts and data scientists—create learning ecosystems in which technology amplifies human contribution rather than displacing it.

The ethical dimension has emerged as the defining challenge of this transformation. As algorithms increasingly influence decisions regarding hiring, evaluation, and career progression, ensuring fairness, transparency, and accountability becomes a moral and strategic necessity. The most influential works in the field, many originating from the United Kingdom, have established ethical AI governance as a new disciplinary frontier, calling for regulatory

oversight and algorithmic auditing to prevent systemic bias. At the same time, the digital divide between advanced and developing economies poses a risk that AI-driven HR innovations could reinforce rather than reduce global inequality. Regional disparities in access to data, infrastructure, and digital competencies remain central obstacles to inclusive HR modernisation. Addressing these challenges requires deliberate policies that promote knowledge sharing, capacity building, and collaboration across borders, ensuring that the benefits of AI in HRM are distributed equitably rather than concentrated in a handful of technologically privileged regions.

Ultimately, the discussion reveals that the future of HRM is not about choosing between human and artificial intelligence, but in mastering their synergy. AI offers unprecedented analytical precision and operational efficiency, while human judgment provides ethical grounding, contextual awareness, and emotional intelligence. When these capacities interact within frameworks of responsibility and learning, organisations become more agile, transparent, and humane. The integration of TOE, TAM, and AMO principles can therefore transform HR from a support function into a strategic driver of innovation, sustainability, and equity. The true measure of success for AI-HRM will not be the sophistication of its algorithms, but the extent to which it creates workplaces that are technologically advanced yet profoundly human—where intelligence, both natural and artificial, collaborates in service of collective growth.

CONCLUSION

This bibliometric study confirms the rapid emergence of artificial intelligence within human resource management, documenting its evolution from a peripheral topic into a mature academic and strategic discipline. The surge in research after 2018, the increasing citation impact, and the dense global collaboration networks demonstrate a structural shift in HRM thinking—one in which data analytics and machine learning connect technological progress with human decision-making. These advances have redefined HR functions, enabling predictive recruitment, data-driven performance management, and adaptive learning systems that transform HR from an administrative to a leadership function.

However, the findings also reveal persistent gaps between technological potential and organisational readiness. Uneven infrastructure, limited user competence, and weak ethical governance continue to hinder effective implementation. Research output remains concentrated in advanced economies, risking a widening global divide in digital capabilities. The future of AI-HRM must therefore move beyond technological fascination towards a holistic, human-human-centred framework that values transparency, inclusiveness, and responsibility alongside efficiency and innovation. Integrating established models such as TOE, TAM, and AMO provides a balanced foundation for this transformation—ensuring structural preparedness, promoting user acceptance, and sustaining performance through capability, motivation, and opportunity.

For both practitioners and policymakers, these results highlight the importance of coupling innovation with ethics and education. AI demonstrably enhances efficiency and talent management, but its benefits will remain fragile unless accompanied by strong governance and systematic skill development. Organisations should invest in digital literacy and interdisciplinary collaboration, while policymakers support equitable access and training. Future research should focus on three priorities: developing ethical AI frameworks that prevent algorithmic bias, analysing long-term effects of AI on workforce dynamics, and creating scalable upskilling strategies adaptable to diverse economies and sectors.

Ultimately, the future of AI-HRM depends not on choosing between human and artificial intelligence, but on cultivating their synergy. The discipline's lasting value will lie in its ability to merge innovation with human insight—transforming HR into a strategic driver that amplifies human potential and builds resilient, equitable organisations in the digital era.

DECLARATION OF GENERATIVE AI AND AI-ASSISTED TECHNOLOGIES IN THE WRITING PROCESS

This article is based on the authors' original research and intellectual contribution. During the final preparation of the manuscript – particularly for language refinement, structural condensation, and consistency review – the authors used generative artificial intelligence (AI) as an assistive resource. The authors have thoroughly reviewed, verified, and edited all AI-assisted text and take full responsibility for the content and conclusions

presented in this paper. The use of AI tools did not alter the substance, interpretation, or scholarly integrity of the original work.

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SAVREMENI TRENDOVI U FUNKCIJI UPRAVLJANJA LJUDSKIM RESURSIMA I PRIMENI VEŠTAČKE INTELIGENCIJE: BIBLIOMETRIJSKA ANALIZA

Ovaj rad istražuje savremene trendove u praksi upravljanja ljudskim resursima u svetlu brzih tehnoloških promena, sa posebnim naglaskom na rastuću integraciju veštačke inteligencije (AI) u organizacije koje prolaze kroz digitalnu transformaciju. Korišćenjem bibliometrijske analize 715 radova indeksiranih u bazi Scopus, objavljenih u periodu od 2010. do 2024. godine, studija otkriva značajan porast naučnih publikacija nakon 2018. godine, što odražava transformativnu ulogu AI u redefinisanju funkcija upravljanja ljudskim resursima. Rezultati identifikuju Indiju, Kinu i Sjedinjene Američke Države kao glavne doprinoseće zemlje u ovoj oblasti istraživanja, uz istovremeno ukazivanje na nedovoljnu zastupljenost arapskih regiona. Najistaknutije istraživačke teme obuhvataju donošenje odluka zasnovano na AI, primenu mašinskog učenja i etičke aspekte korišćenja AI tehnologija. Analiza takođe naglašava visok stepen međunarodne saradnje, pri čemu Sjedinjene Države zauzimaju centralno mesto u globalnim istraživačkim mrežama. Nalazi ukazuju na potencijal AI da unapredi procese zapošljavanja, upravljanje performansama i operativnu efikasnost u funkciji ljudskih resursa. Ipak, izazovi poput troškova implementacije, etičkih dilema i potrebe za razvojem digitalnih kompetencija i dalje predstavljaju ključne prepreke. Studija preporučuje jačanje digitalnih veština, podsticanje rigoroznih istraživanja i razvoj inkluzivnih politika koje omogućavaju etičnu i uspešnu integraciju veštačke inteligencije u funkcije upravljanja ljudskim resursima u okviru ekonomskih organizacija.

Keywords: Upravljanje ljudskim resursima; Veštačka inteligencija; Bibliometrijska analiza.